

Performance Report on Surface Streets in the Seattle Central Business District

Volume 3: Second Update – Post Tunnel Closure



As required by the Agreement between King County, City of Seattle and Sound Transit, as revised June 24, 2002, for the Downtown Seattle Transit Tunnel and Related Facilities.

Prepared by the Monitor and Maintain Committee, with representation from the following agencies:



City of Seattle



King County



SOUNDTRANSIT



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Report Purpose

Volume 3 of this report, and subsequent updates, is intended to provide the documentation necessary to satisfy the requirements of Section 10.3 of the “Agreement Regarding the Design, Construction and Operation of the Downtown Seattle Transit Tunnel and Related Facilities”, as executed by the City of Seattle, King County and Sound Transit.

Excerpts from Section 10.3 of this Agreement read as follows:

“It is the Parties’ intent that the Downtown Seattle Traffic and Street Improvements will be sufficient to maintain bus service performance on surface streets in downtown Seattle, during the closure period and after the tunnel is re-opened at performance levels similar to those existing prior to the Closure Period. The Parties hereby establish a Monitor and Maintain Committee (M&M Committee) to be comprised of the designated contacts set forth in Section 20.0. The M&M Committee may be expanded to include participation by other public agencies at the discretion of the Parties. The M&M Committee shall conduct baseline studies of bus travel time and passenger convenience, security, safety and comfort during a measurement period prior to the Closure Period (Baseline Measurement Period.)”

“During the Closure Period and for one year after the Tunnel is reopened, the M&M Committee shall continue to monitor downtown Seattle transportation system performance and make recommendations to the Parties to take actions to maintain said system performance. In performing its functions, the Committee shall be directed to (a) consult with and seek input from suburban stakeholders and (b) report quarterly to the City Council’s Transportation Committee regarding the performance of the downtown transportation system and regarding the Committee’s consultation with various stakeholders.”

The M&M Committee issued its first performance report in September, 2005 just prior to tunnel closure. Volume 1 of the report documented pre-tunnel closure conditions for six specific performance measures. Data for this initial baseline report was collected during the spring and summer of 2005. The six performance measures are as follows:

- Measure 1: Transit travel time
- Measure 2: General purpose traffic operations
- Measure 3: Transit ridership and bus volumes
- Measure 4: Pedestrian activity at bus zones
- Measure 5: Seattle Central Business District (CBD) Customer Surveys
- Measure 6: Transportation Demand Management (TDM) mitigation programs

Volume 2 of the report was issued January, 2006. It provided the initial assessment of how the tunnel closure plan performed overall, and provided a detailed summary of the contingency planning effort that took place in the first 90 days following tunnel closure. The data sets used for Volume 2 were collected in the fall of 2005, following tunnel closure and extended up to the beginning of the Thanksgiving holidays. This allowed for a better comparison of before and after tunnel closure conditions in the Seattle central business district for non-holiday times.

Volume 3 of this report provides updates on a subset of the six performance measures. Specifically, Volume 3 provides updated information on Measures 1, 3 and 4. These measures are: transit travel time; transit ridership and bus volumes; and pedestrian activity at bus zones. For this report, transit travel time and bus volumes are derived from the first two weeks in February following the spring 2006 service change. Transit ridership figures were derived from the fall 2006 service change that ended on February 11, 2006. Pedestrian activity at bus stops was derived from a survey taken in late February/early March.

The projected schedule for the release of the balance of the report updates is identified in Figure 1, as are the updated data sets that will be available with each of these reports. There will be eight reports issued in total over the next three and one half years. With the release of Volume 3, there are five reports yet to be released.

Figure 1. Performance Report Release Dates

Performance Measure Updates	Performance Report Release Dates							
	Complete	Complete	Complete	July 06	Dec 06	June 07	Dec 07	Mar 08
	Sept 05	Jan 06	Mar 06					
	Volume 1	Volume 2	Volume 3					
Transit Travel Time	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
General Purpose Traffic Operations	⊙	⊙		⊙		⊙		⊙
Transit Ridership and Bus Volumes	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
Pedestrian Activity at Bus Zones	⊙	⊙	⊙				⊙	
Surveys of CBD customers	⊙			⊙				⊙
TDM mitigation programs	⊙	⊙		⊙	⊙	⊙	⊙	⊙

It is the intent of the M&M Committee to use these reports as a means of communicating on a regular basis the actions taken by the M&M Committee to address any deficiencies in the performance of the downtown core transportation system during tunnel closure. In July 2006 the M&M Committee will issue Volume 4, the fourth installment of this report.

Executive Summary

As previously reported, tunnel closure largely went as planned, and there were no major system failures. The problems and issues encountered in the first week following the September 2005 service change were fairly typical of any major transit service change. One factor contributing to the success of tunnel closure was the creation of an interagency Contingency Planning/Quick Response team, composed of representatives from Sound Transit, King County Metro, City of Seattle, Community Transit and Pierce Transit. This group actively monitored downtown traffic, transit operations and pedestrians following tunnel closure.

Following tunnel closure, one of the primary areas of focus for this Contingency Planning/Quick Response teams was the Stewart/Virginia transit corridor. This corridor experienced a significant increase in congestion and delay above what was expected. A set of additional improvements was identified and implemented to respond to these problems. However, all of the measures taken to address the problems in this corridor were not in place until February 2006. Therefore, Volume 3 of this report is the first opportunity to report on the combined effectiveness of the actions that were taken to address the problems on these two corridors.

Status of Stewart and Virginia Street Operations:

Following tunnel closure, PM peak travel times on Stewart Street increased to 10 minutes or more. On particularly congested evenings, the increased travel time could be in excess of 25 minutes. Virginia Street was also compromised but to a lesser extent. The conditions on Stewart and Virginia Streets were particularly problematic since they impacted a number of former tunnel routes, where the patrons were already experiencing a slower trip due to operation on surface streets. The operation on Stewart Street also impacted other areas in the Seattle Central Business District, including downstream bus stops that became more congested due to the service delays that caused waiting passengers to accumulate for longer periods of time.

The interagency Contingency Planning/Quick Response team immediately began to focus on developing solutions to these operations problems and a series of actions were taken by the City of Seattle and King County Metro following notification of affected properties. The City of Seattle implemented additional peak hour parking restrictions. They also installed pedestrian signal heads at Second Avenue and Stewart Street to better manage pedestrian/bus conflicts, and they relocated the charter bus zone for the Westin Hotel. Metro made a number of service adjustments, including relocating some routes off of Stewart Street, adjusting the stop pattern to reduce the number of times buses stopped on Stewart Street, closing the zone at Fifth Avenue and Westlake, and making numerous schedule adjustments to downtown core running times.

The cumulative effect of all these action has been quite positive. Stewart Street travel times have been reduced by seven minutes when compared with running time immediately after tunnel closure. The travel time on Stewart Street is now less than the time it took to travel this corridor before tunnel closure.

Although buses did not begin operation on Virginia Street until the September 2005 service change, travel time has also improved on Virginia Street by five to six minutes when comparing February 2006 data with September-November 2005 data. As importantly, the overall reliability for travel through both corridors has been improved substantially.

Other Performance Measures:

Additionally, Volume 3 of this Report provides updated information on the performance measures related to transit travel time, transit ridership and bus volumes, and pedestrian activity at bus stops in the Seattle Central Business District, post tunnel closure. Some key highlights from the updated information of these performance measures are noted below:

Transit Travel Time and Reliability

Travel time data for Volume 3 was collected from February 13 through February 24, 2006.

For the aggregate measure, the average travel time in downtown Seattle for operation on surface streets decreased by 22% over the baseline and by 33% compared with the initial tunnel closure results. This improvement is due in large part to the additional mitigation measures that were implemented on Stewart and Virginia Streets. It also reflects the schedule revisions that were made to capture the operating conditions on Third Avenue that were better than originally projected. It appears that the investments made to improve surface operations have helped improve surface travel times so much so, that even with the addition of the former tunnel buses, average travel times on surface streets are lower. Though it is still more expensive to operate the former tunnel routes on surface streets, worst case scenarios for surface operation during tunnel closure have been avoided.

It is probably prudent to caveat these findings with the following observations. The two weeks of February data measures a period of time with no unusual traffic conditions; there were no major holidays, sporting events or large public gatherings during this period in downtown Seattle. Updated traffic counts will not be available until Volume 4. Therefore, it is not known if there have been significant changes in traffic volumes on downtown streets and a corresponding reduction in congestion that might be assisting with the improved transit operations

At the corridor level, transit travel time comparisons were made using the two data sets collected since tunnel closure, the data from Volume 2, taken immediately after tunnel closure and the data set used for Volume 3 for February 2006. The results are summarized below:

- Travel time on northbound First Avenue improved by about two minutes between Volume 2 and Volume 3 in both the AM and PM peaks; in the northbound direction First Avenue now operates at level comparable to before tunnel closure. Southbound travel was essentially unchanged from Volume 2 results.
- Between Volumes 2 and 3, Second Avenue travel times were largely unchanged for the AM period but there was an improvement of about 1 minute in the PM period, making PM peak conditions comparable to before tunnel closure conditions.
- Third Avenue showed improvement in the northbound direction for the PM period; there were no substantial changes for the southbound direction or the AM period northbound; Third Avenue continues to perform better in the peak periods than before tunnel closure.
- Fourth Avenue showed improvement in both the AM and PM peak; in the PM peak, travel time was reduced by over 90 seconds on average.
- Travel on Virginia Street, Olive Way, and Howell all improved, in some cases by substantial amounts.
- Travel on Stewart Street improved by about seven minutes between Volume 2 and 3, and the current average travel times are now faster than the pre-closure baseline.

Transit Ridership and Bus Volumes

Based on fall 2004 data, ridership at the downtown screen line at University Street was 95,000 riders. This number increased to 106,700 riders in the spring 2005 service change (June through September) that immediately preceded tunnel closure. Based on complete data for the fall 2005 service change (September through November), ridership figures indicate that downtown loads crossing University Street have been reduced slightly, to 106,400.

Actual post tunnel closure bus volumes by street segment continue to be generally consistent with the bus volumes that were projected in the baseline report and subsequently reported in Volume 2.

Pedestrian Activity at Bus Zones

The majority of bus zones in the downtown core continue to function at acceptable levels for both waiting patrons and those passing through the zone. However, there were five zones previously identified in Volume 2 for additional monitoring or analysis. Based on updated surveys and analysis, all five of these bus stops now operate at acceptable levels of service for pedestrians traveling through the zone during the evening peak 15-minutes. In the full pedestrian waiting area, all of the bus stops are now operating at LOS A under HCM or “Desirable” under the King County system of measurement for waiting patrons.

Summary of Contingency Planning Measures for Stewart/Virginia Street



As the affected agencies prepared for the tunnel closure, an interagency “Quick Response Team” was established with representatives from King County Transit, Sound Transit, City of Seattle, Community Transit, and Pierce Transit. This team of individuals had the responsibility and authority from each of the involved agencies to quickly respond and correct problems as they occurred.

Following tunnel closure, staff from the Quick Response Team were physically assigned to locations throughout the downtown core, during the morning and evening peak periods, to watch, evaluate, and determine if any corrective actions

were needed to address operational or congestion related problems. Early in this monitoring process, it became apparent that Stewart Street between Second and Eighth Avenues was experiencing significant problems. Virginia Street was also being impacted, but to a lesser extent

Following tunnel closure, transit service on the Stewart Street and Virginia Street corridors experienced significant increases in congestion and delay. These conditions were documented in detail in Volume 2 of the *Post-Tunnel Closure Performance Report*. Transit travel times westbound on Stewart Street increased an average of 10 to 15 minutes per trip on many evenings as compared to pre-closure conditions. Delays of up to 25 minutes per trip were observed on some extremely congested evenings. Travel times eastbound on Virginia Street, although not as severe as Stewart Street, experienced average travel times increases of three to five minutes during the PM peak period. Schedules became very unpredictable and there were numerous customer complaints.

To mitigate these problems, the Quick Response Team was tasked with developing solutions that would help reduce the delay for transit and traffic along these two corridors. A concerted effort was made by the City of Seattle and the various transit agencies to expedite implementation of these changes to Stewart and Virginia Streets.

Since November of 2005, the City of Seattle has implemented the following changes:

- 31 additional parking stalls have been restricted during the PM peak on critical blocks along Stewart Street (mostly new restrictions, some changing from 4-6 to 3-7 p.m.)
- Pedestrian displays were installed at the intersection of Stewart Street and Second Avenue to control pedestrian crossing.
- The charter bus stop at the Westin Hotel was relocated, and the bus zone on Virginia Street, far side of Fifth Avenue, was extended.
- Traffic control at Stewart Street and Third Avenue was improved to help buses access Third Avenue more easily.

Since December of 2005, Metro KC has implemented the following changes:

- Six Metro routes were relocated from the Stewart Street Corridor.
- Stop patterns were consolidated for the remaining nine routes along Stewart Street.
- The bus zone at Westlake and Fifth Avenue was closed.
- The stop pattern was consolidated for the Route 7 local on Virginia Street.
- Schedule adjustments were made to improve on-time performance.

After implementation of the changes listed above, field observations were made and additional travel time measurements taken to assess the level of improvement. Both Transit operators and Metro Service

Quality staff have noted significant reductions in delay and corresponding improvement in travel time reliability along the corridors since the implementation of the improvements noted above.

Looking at transit travel time data from the downtown core monitoring system for the first two weeks of February, 2006, following the service change, there has been a significant improvement in the speed and reliability of transit service on both the Stewart Street and Virginia Street corridors. Transit travel times on Stewart and Virginia Streets are now shorter than before tunnel closure. This represents an 8 minute improvement on Stewart and a 5 minute improvement on Virginia.

Prompt, effective actions by the local agencies on the Quick Response Team resulted in significant improvement in the operation of the Stewart and Virginia Street corridors. Hundreds of daily transit riders from three different counties in the region benefit from the improved conditions on these two corridors. General purpose traffic has been served, as well. Other factors that may also have contributed to improved operations are as follows:

- Transit operators from each agency have become more familiar with how to drive these corridors efficiently.
- General purpose traffic has also become more adept at navigating downtown during the peak periods.
- Following the Christmas/New Year period, holiday and major event traffic have not been a significant factor.